

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Wachendorff-Neumann *et al.*

Appl. No.: 10/518,669

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For: **Fungicidal Combinations of Active Substances**

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Examiner: Qazi, Sabiha Naim

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Declaration of Peter Dahmen Under 37 C.F.R. §1.132

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

I, Peter Dahmen, of Altebrücker Str. 61, 41470 Neuss, Germany, a citizen of Germany, hereby declare:

1. that I am a biologist having studied at the University of Bonn, Germany;
2. that I received the degree of Dr. agr. at the University of Bonn, Germany;
3. that I entered the employ of Bayer Aktiengesellschaft, Leverkusen, in 1991, where I have been employed in the department of Biology Herbicides, that after the spin-off from Bayer CropScience AG I am now employee of this company in the department of Biology Fungicides;
4. that I have specialized in the field of fungicide research;
5. that the following tests have been carried out under my supervision and control.

Example 1

A synergistic effect does exist for fungicides, if the fungicidal efficacy of the combinations or compositions according to the invention is greater than the expected efficacy for the combination of two or three active compounds according to S.R. Colby ("Calculation of the synergistic and antagonistic responses of herbicide combinations", Weeds 1967, 15, 20-22) which is calculated as shown below:

If

X is the efficacy observed for compound (A) at a defined dose (m g/ha),

Y is the efficacy observed for compound (B) at a defined dose (n g/ha),

Z is the efficacy observed for compound (C) at a defined dose (r g/ha),

E₁ is the efficacy observed for compound (A) and compound (B) together at defined doses of m and n g/ha,

E₂ is the efficacy observed for compound (A) and compound (B) and compound (C) together at defined doses of m, n and r g/ha,

the Colby formula can be defined as shown below for a binary mixture:

$$E_1 = X + Y - \frac{X \cdot Y}{100}$$

and for a ternary mixture:

$$E_2 = X + Y + Z - \left(\frac{X \cdot Y + X \cdot Z + Y \cdot Z}{100} \right) + \frac{X \cdot Y \cdot Z}{10000}$$

The efficacies are calculated as %. 0 % efficacy is corresponding to the non-treated control, while an efficacy of 100 % implies that no infection at all can be observed.

In case that the fungicidal effect actual observed is greater than the additive efficacy calculated using Colby's formula, the combinations or compositions are super-additive, i.e. a synergistic effect can be observed

Blumeria graminis - Test (Wheat) / preventive

Solvent:	50	parts by weight of N,N-dimethylacetamide
Emulsifier:	1	part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration, or a commercial formulation of active compound or active compound combination is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the active compound preparation at the stated application rate. After the spray coating has dried on, the plants are dusted with spores of *Blumeria graminis f.sp. tritici*. The plants are placed in a greenhouse at a temperature of about 20°C and a relative atmospheric humidity of about 80 %, to foster the development of mildew pustules.

Evaluation is carried out 6 days after the inoculation. 0 % means an efficacy which corresponds to that of the control, whereas an efficacy of 100 % means that no infection is observed.

Table 1: *Blumeria graminis* – Test (Wheat) / preventive

Active compounds/combination	Application rate of active compound in ppm	Efficacy in %	
		found	calculated*
(I) Trifloxystrobin	3.3	63	
(II) Prothioconazole	3.3	0	
(III) Tebuconazole	3.3	11	
(I) + (II) + (III)	3.3 + 3.3 + 3.3	75	67

* according to Colby formula

Example 2

Fusarium culmorum - Test (Wheat) / curative

Solvent: 50 parts by weight of N,N-dimethylacetamide
Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration, or a commercial formulation of active compound or active compound combination is diluted with water to the desired concentration.

To test for curative activity, young plants are sprayed with a conidia suspension of *Fusarium culmorum*. The plants remain in an incubation cabin at 22°C and 100 % relative atmospheric humidity for 24 hours. The plants are then sprayed with the active compound preparation at the stated application rate. After the spray coating has dried on, the plants remain in a greenhouse under translucent incubation hoods at a temperature of about 22°C and a relative atmospheric humidity of about 100 %.

Evaluation is carried out 5 days after the inoculation. 0 % means an efficacy which corresponds to that of the control, whereas an efficacy of 100 % means that no infection is observed.

Table 2: *Fusarium culmorum* – Test (Wheat) / curative

Active compounds/combination	Application rate of active compound in ppm	Efficacy in %
(I) Trifloxistrobin	10	29
(II) Prothioconazole	10	57
(III) Tebuconazole	10	57
(I) + (II) + (III) (1:1:1)	10	71

The undersigned declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed at Monheim, Germany,

August 22, 2007
Date

Pet. Dahmen
Dr. Peter Dahmen

Declaration_Peter Dahmen (2).DOC